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ABSTRACT

Reported is a study on teacher's visually perceived nonverbal behaviors and their relationship to student's affective responses among 30 junior high teachers. Each teacher was requested to present a lesson at the front of the classroom. About 20 minutes of one of their classes were videotaped. Two 5-minute segments (episodes) and one 15-second segment of teacher behaviors were edited and extracted. Coding symbols were used to identify and categorize individual behaviors by different observers, and interobserver agreement coefficients were computed by Scott's method. For each behavior, data on frequency and duration of occurrence were collected. A total of 879 students in a remote community was asked to react to five episodes, and 395 students, in addition, reacted to brief tapes. A semantic different scale was used to record responses, and teacher characteristics were described by students. Response means were computed for boys, girls, and boys and girls combined. Computer analyses showed that nonverbal behaviors measured in terms of duration are good predictors of student affective responses. Students preferred some kinds of teacher behaviors. Boys and girls responded differently to teachers. Students tended to make their affective judgments in the absence of consciously perceived awareness. Included in the appendix are categories of teacher nonverbal behaviors. (CC)

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VISUALLY PERCEIVED NONVERBAL BEHAVIORS OF TEACHERS AND THEIR RELATIONSHIP TO AFFECTIVE RESPONSES OF STUDENTS

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INTRODUCTION

A classroom is an extraordinarily complex interaction network of social and psychological forces. For many years investigators have sought to examine critical elements of the complex in order to better understand the entire system. One line of investigation, aimed at elucidating systematic, predictable events in the classroom, has been the identification and classification of teacher-pupil contacts in the form of specifically defined behavioral acts.

Many studies have examined the flow of verbal interaction between teachers and their students. In such studies the role of various verbal acts is predetermined by the investigator. The verbal behaviors are then categorized and classrooms are observed in order to encode student and teacher verbal behaviors. One widely used system of this type has been developed by Flanders. The Flanders system proceeds from the assumption that:

> ... teaching behavior and pupil responses are expressed primarily through the spoken word as a series of verbal events which occur one after another. (Flanders, 1968)

That is, the verbal behavior of an individual is considered to be an adequate sample of his total behavior.

Since even a casual observer of classroom interaction can perceive student reactions to a teacher's tone of voice, facial expressions, physical proximity, and other nonverbal behaviors, it is evident that the procedure of charting verbal interactions is limited in the degree to which it elucidates the total interaction process in the classroom.

That there is a need to examine the nonverbal behavior of teachers and its influence on students has been evident for some time. Hendrix (1960) has observed that:

> One phase of teaching looming large in things revealed to date is the enormous role played by nonverbal communication between teacher and students. Current research in paralinguistics - especially that involving kinesics - is revealing ways to identify and classify the nonverbal behavior which human beings learn to interpret in each other; it is thus that we produce the complicated stream of communication sometimes accompanying, sometimes independent of, words. Such an analysis might enable a teacher to cultivate desirable paralinguistic effects, and to avoid those which are destructive to his work.

More recently, Evans and Balzer (1970), after assessing the relative amounts of time employed in verbal and nonverbal behavior in biology classrooms, concluded that:

> ... nonverbal behavior may be of substantial importance in teacher behavior, and should be further investigated rather than ignored or assumed as unimportant.

That Evans and Balzer were still calling for investigations of teacher nonverbal behavior ten years after Hendrix made her eloquent statement of the value of such research, suggests that there are problems in the development and implementation of such studies. Evans (1969) has suggested several reasons for this shortcoming in research on teacher behavior:

1. ... methods of recording or 'capturing' teacher behaviors have been inadequate.

2. ... teacher classroom behavior is so complex that researchers have limited their studies to certain behaviors, e.g., verbal.

3. ... researchers have developed category systems for systematic observation based on theoretical models of the way teaching is or what it should be like. These systems were developed totally or partially in a deductive manner. As a result, certain observed teacher behaviors could not be properly encoded into the category system because they were not considered in the preconseived model.

Allon (1969), in a discussion of the structural limitations of classroom interaction analysis, also supports Evans' argument regarding the deductive nature of such studies.

To the above, the investigator would add the observation that much potentially relevant data and methodology from the fields of psychological research on human behavior appears to have been overlooked by investigators attempting to study classroom interaction.

Considerable information concerning the nature and role of nonverbal behavior in human communication has been generated by psychological research. Ekman (1965), in relating nonverbal behavior to verbal acts, states that:

> ... the class of information provided by nonverbal behavior can serve to repeat, contradict, or substitute for a verbal message, as well as accent certain words, maintain the communicative flow, reflect changes in the relationship in association with particular verbal messages and indicate a persons feelings about his verbal statement.

These various modifying effects of nonverbal behavior on verbal communication are complicated by the fact that much nonverbal behavior is unconscious i.e., the individual transmitting a verbal message is unaware of his accompanying nonverbal modifiers. Thus, at times the unconscious nonverbal message supports or augments the verbal message (congruency), and at other times the nonverbal message contradicts the verbal message (incongruency). In the latter case the received message differs from that which was consciously intended by the communicator.

An additional effect of nonverbal behavior is to have a strong influence on the communication of affectivity between a communicator and an addressee. Investigations have suggested that facial expressions, tone of voice, frequency of exchanged glances, head and body immediacy, postural lean, duration of eye contact, intercommunicator distance, postural congruence, and other nonverbal behaviors play a significant role in determining how an addressee feels toward a communicator.

It can be seen that the role of nonverbal behavior in communication is significant and complex, contributing in no small way to the overall complexity of teacher behavior which Evans cites as one explanation of the paucity of research in this area.

A comprehensive investigation of the multiplicity of effects of nonverbal behavior in the classroom is beyond the scope of the research reported here. The study described is addressed to the identification and measurement of various visually perceived nonverbal behaviors (e.g., facial expressions, gestures, body positions and motions, etc.) and other teacher characteristics which may play a role in the establishment of affective responses of students to teachers.

Statement of the Problem

The problem is one of ascertaining some of the visually perceived characteristics of teachers which play a role in determining the degree of liking (or disliking) which stu-

dents feel toward the teachers. It may be summarized in the form of several questions:

a. Can a reliable category system be developed to identify and measure visually perceived nonverbal behaviors of teachers?

b. What visual cues presented by teachers do students respond to in the formation of an affective response to the teachers?

c. Are there differential effects of the various visual cues of teachers on the formation of affective responses by students?

d. Are students consciously aware of the visual cues which contribute to their affective responses to teachers?

For the purpose of the research herein described, the following hypotheses are investigated:

H_1: A reliable category system for the recording of visually perceived nonverbal behaviors of teachers can be developed.

H_2: Visual cues instrumental in the communication of affect are identifiable and relate significantly with affective responses to the cues.

H_3: Visual cues reported by students will relate significantly to their indicated affective response to teachers.

Need for the Study

The assessment of teacher performance, whether it be in the selection, training, or on-the-job evaluation of teachers, requires that valid criteria for the evaluation of the teaching act be determined. Too little is known about the nature and operation of the various forces which operate in the classroom to adequately design measures of teacher effectiveness. Biddle and Ellena (1964) have observed:

> ... *we do not know how to define, prepare for, or measure teacher competence.* The bulk of studies on teacher effectiveness to date have produced negligible results. Further, until a great deal more is known

about classroom interaction, the bulk of educational theories must be judged "untested."

There is no evidence that the situation described by Biddle and Ellena has been significantly improved in the intervening years since 1964.

While some efforts have been made to examine nonverbal interaction in the classroom (e.g., Galloway, 1962, 1967· French, 1968· French and Galloway, 1968; Lail, 1969; Victoria, 1970), it is evident that much more information concerning the role of teacher nonverbal behavior in influencing students is needed. The present study is viewed as a search for relationships an effort to identify teacher behaviors which relate to important student responses. If it provides some insight into the role of nonverbal communication in the classroom, it may reveal a means to gain entry into the larger problem of comprehending the total complex of verbal-nonverbal interaction which ultimately must be understood before measures of teacher effectiveness may be developed.

Basic Assumptions

The basic assumptions on which the investigation was based are as follows:

1. Students will respond to televised images of teachers in a manner similar to that in which they respond to "live" teachers.
2. Students will experience, and accurately report, an affective response to televised images of teachers.
3. Students will experience an affective response to a televised image of a teacher which is five minutes in duration.
4. Teacher visual cues have an additive effect in the induction of an affective response by students.

Design of the Study

Selection of Teachers

A total of 30 teachers were used in the study. They were selected from among five schools: three junior high schools in a university town in the Willamette Valley of Oregon, and two junior-senior high schools in nearby rural communities.

Teachers were asked to allow the investigator to bring in a portable videotape recorder and television camera, and tape at least 20 minutes of one of their classes. The only request made of the teacher was that he plan some type of presentation in which he would be at the front of the classroom, isolated from the group of students in the class.

Videotaping of Teachers

The video-recording equipment was moved into each classroom prior to the beginning of the class in which the recording was to occur. Since the investigator was concerned only with the visually perceived nonverbal behavior of the teachers, no sound was recorded and, as a result, no microphone intruded on the classroom.

In most cases the teachers planned to utilize only a portion of their class for a formal presentation, the remainder of the time used variously for supervised study, individual instruction, etc. The taped portions of the various classes ranged from 15 minutes to 35 minutes.

Extraction of Episodes

Using two videotape recorders, each of the teacher tapes was edited to extract two segments of teacher behavior (episodes), each of five minutes duration. Segments were chosen on the basis of the technical quality of the televised images rather than for preselected behaviors.

In addition to the two five-minute episodes, a brief 15-second segment was also extracted from each of the teacher tapes.

Development of the Instrument

The instrument used to code and measure the nonverbal behaviors displayed by the teachers in the five-minute taped episodes was developed in collaboration with Paul Eggen who required a similar instrument for studying nonverbal behavior of students.

Categories of behavior were derived from suggestions in the literature and expanded to include other behaviors observed in the videotapes of the teachers. When the categories of behavior had been established and individual behaviors identified, each behavior was assigned a coding symbol for use in the analysis of the videotapes (See Appendix - Categories of Teacher Nonverbal Behavior).

Observer Agreement

When the instrument was completed, it was determined that a five-second time-sampling interval would adequately represent the patterns of behavior exhibited by the teachers in the videotapes. Two observers then used to instrument to independently code sample videotapes. Disagreements encountered in these "trial runs" were then examined and used as a basis for developing coding rules to be employed in the further use of the instrument.

Each observer then independently coded ten five-minute samples of the videotaped episodes. Interobserver coefficients were then computed for each category in the instrument and for the instrument as a whole, using a procedure suggested by Scott (1955). The values of these Interobserver coefficients appear in the Appendix - Categories of Teacher Nonverbal Behavior.

Collection of Student Response Data

Since the affective responses of students were desired solely on the basis of their reaction to the videotaped images of the teachers in the study, and any other experiences the student might have had with these teachers might have biased their responses, the investigator arranged to acquire student subjects in a community remote from the community in and near which the teacher tapes were produced. There was no evidence that any of the

students had ever seen or known any of the teachers prior to seeing them on the television screen.

Student response data was collected from 879 students in grades seven through nine, selected from among six different junior high schools. All of the students reacted to five of the five-minute episodes of the teachers. In addition, 395 of the students provided reactions to the brief, 15-second videotapes of the teachers.

The students were asked to react to the videotapes by recording their affective response to each teacher on a seven-point semantic differential scale of the type shown below:

Disliked Very Much							Liked Very Much
-3	-2	-1	0	+1	+2	+3	

In addition, for the five-minute episodes, students were asked to write brief descriptions of the teacher characteristics they noted and employed in arriving at their affective response to the teacher.

Reduction of Data

Each of the teacher tapes was analyzed by means of the previously described instrument. At each 5-second recording interval, the investigator recorded the particular nonverbal behavior manifested by the teacher at that instant. For each behavior, both frequency (how often the behavior occurred in 5 minutes) and duration (how many of the five second samples were represented by the behavior) data were collected.

Mean student responses from the semantic differential scale data were computed for each tape. Separate means were computed for boys, girls, and boys and girls combined. All reduced data were transferred to punched cards and introduced into a computer for analysis, using a Step-wise Multiple Linear Regression Analysis program

FINDINGS

The findings of the study fall into two categories: those associated with the three hypotheses stated earlier (Pg. 4), and those not related to the hypotheses.

Findings Related to Hypotheses

Hypothesis 1

H_1: A reliable category system for the recording of visually perceived nonverbal behaviors of teachers can be developed.

To be unable to reject Hypohtesis 1, it is necessary to show that the instrument constructed for the purpose of recording teacher nonverbal behaviors satisfies the requirements of a category system and also to demonstrate that it is a reliable instrument.

The basic design of the instrument is that of a hierarchical arrangement of categories into which the nonverbal behaviors of the teachers could be classified. The completed instrument (See Appendix - Categories of Teacher Nonverbal Behavior) consists of several classificatory levels which (a) taken together, account for all possible behaviors, and (b) are mutually exclusive. Thus, the instrument satisfies the requirements for a category system.

For an observational instrument to be judged reliable, it must consistently produce the same scores when used by different observers. A measure of reliability is the reliability coefficient. The computation of a reliability coefficient will differ depending on the nature of the data generated by an observer using a category system. In the present study the reliability coefficient employed was π, an Interobserver Agreement Coefficient suggested by Scott (1955). π can be roughly interpreted as "the extent to which the coding reliability exceeds chance.' (Scott, 1955) Any positive value of π then, indicates a degree of interobserver agreement which exceeds that expected due to chance. Thus the decision as to what constitutes an acceptably high value for π becomes a matter of convention

rather than an absolute criterion. Workers who have employed Scott's π as a measure of instrument reliability have tended to accept a value of 0.60 as a minimally acceptable measure of interobserver agreement. As can be seen in the Appendix - Categories of Teacher Nonverbal Behavior, all of the π values for the individual categories of the instrument, as well as the composite π, exceed 0.60.

The establishment of satisfactorily high levels of interobserver agreement argues for the objectivity of the instrument, i.e., when different observers employ the instrument with a high degree of agreement, concern that an observer requires unusual diagnostic talents tends to be dispelled. The establishment of objectivity argues convincingly for the instruments reliability. Thus, Hypothesis 1 was not rejected, i.e., the instrument was judged to be a reliable category system for the recording of visually perceived nonverbal teacher behaviors.

Hypothesis 2

H_2: Visual cues instrumental in the communication of affect are identifiable and relate significantly with affective responses to the cues.

Stepwaise multiple regression analysis was employed in testing Hypothesis 2. The regression analysis is designed to examine the pattern of variation of a dependent variable (affective response scores) in relation to patterns of variation in several independent variables (nonverbal behaviors of teachers). When the variation in the independent variables (taken in various combinations) corresponds to the variation in the dependent variable, as determined by an F test of significance, a multiple regression model is generated from the data which shows the dependent variable as a function of a weighted sum of the significant independent variables

Because the nonverbal behavior data were calculated in terms of both duration and frequency of occurrence, and because boys' and girls' affective response data were isolated and studied separately as well as in combination, nine different multiple regression

analyses were performed. The variables examined and the measures employed are described in Table 1 below.

Table 1. Description of Multiple Regression Analyses

ANALYSIS	DEPENDENT VARIABLE Mean Affective Responses of	INDEPENDENT VARIABLES Teacher Nonverbal Behaviors Measured in Terms of
FBOY	Boys only	Frequency only
DBOY	Boys only	Duration only
FDBOY	Boys only	Frequency and Duration
FGIRL	Girls only	Frequency only
DGIRL	Girls only	Duration only
FDGIRL	Girls only	Frequency and Duration
FCOMB	Boys and Girls	Frequency only
DCOMB	Boys and Girls	Duration only
FDCOMB	Boys and Girls	Frequency and Duration

The analyses in which frequency and duration data concerning teacher nonverbal behavior were examined separately and in combination were designed to establish whether frequency or duration measures were better predictors of student affective response. The findings indicate that teacher nonverbal behaviors, measured in terms of their duration, are much better predictors of student affective response than the same behaviors measured in terms of frequency of occurrence. This relationship is revealed in Table 2 (Pg. 12) where, when teacher nonverbal behaviors measured in terms of both frequency and duration, only the behaviors measured in terms of duration where identified as significant predictor variables (Age of the teachers was not measured in terms of frequency or duration.)

Table 2. Results of the FDCOMB regression analysis

Step No.	Measure	Variable	Variable Symbol	F-Level	R^2
1	Dura.	Facial Expression (Smile)	FS	37.88**	.408
2	Dura.	Manipulation (Presents object)	MP	11.83**	.514
3	----	Age	A	11.52**	.601
4	Dura.	Body Lean (Backward supported)	BS	6.72*	.647
5	Dura.	Manipulation (No manipulation)	MN	4.60*	.676

Multiple Regression Model

$$Y = 4.30 + .100\ FS + .065\ MP - .353\ A - 1.39\ BS + .009\ MN$$

* = Significant ($p < .05$)
** = Highly Significant ($p < .01$)

Since the predictor variables which are identified as significant in the analysis above are the same as those in the DCOMB analysis, an examination of the results will provide an interpretation of the situation where the combined affective responses of boys and girls are examined as functions of teacher nonverbal behaviors measured in terms of duration.

Five variables are identified as significant predictors of the dependent variable, combined affective response of boys and girls. Four of these are teacher nonverbal behaviors and the fifth is the teachers' ages. Together, the five predictor variables account for 67.6 percent (i.e., for all variables taken together $R^2 = .676$) of the explained variability in the dependent variable. The weighted effects, and the direction of influence (+ or -), of the predictor variables are revealed in the Multiple Regression Model. Examination of the multiple regression model indicates that the teachers' ages and the duration

of supported backward lean vary inversely in relation to the affective responses of the students. All other predictor variables vary directly with the dependent variable.

To determine if the affective responses of boys and girls differed in relation to the sex of the student respondents, anlyses DBOY and DGIRL were performed. Results of the DBOY anlysis appear in Table 3 below.

Table 3. Results of the DBOY regression analysis

Step No.	Variable	Variable Symbol	F-Level	R^2
1	Facial Expression (Smile)	FS	28.83**	.344
2	Manipulation (Presents object)	MP	5.75*	.407
3	Age	A	11.53**	.513
4	Gesticulation (Gestures)	G	5.74*	.561
5	Facial Expression (Other)	FO	4.55*	.597
6	First Impression (Boys)	FB	4.34*	.629

Multiple Regression Model

$$Y = 4.71 + 8.58\ FS + .047\ MP - .425\ A + .019\ G - .029\ FO - .018\ FB$$

* = Significant ($p < .05$)
** = Highly significant ($p < .01$)

The DBOY regression analysis reveals that six independent variables were found to be significant predictors of the dependent variable Y (Boys' affective responses to the teachers). Four of the variables were nonverbal behaviors and the other two were teachers' ages and boys' first impression (i.e., affective rating of teachers based on 15-second videotaped episodes). Teachers' ages, Facial Expression (Other), and First Impression (Boys) varied inversely in relation to the dependent variable. All other significant pre-

dictor variables varied directly in relation to the dependent variable.

When the affective responses of girls to the teachers are treated as the dependent variable and the teachers' nonverbal behaviors are measured in terms of duration, the relationships shown in Table 4 result.

Table 4. Results of the DGIRL regression analysis

Step No.	Variable	Variable Symbol	F-Level	R^2
1	Facial Expression (Smile)	FS	33.90**	.381
2	Manipulation (Presents object)	MP	14.69**	.514
3	First Impression (Girls)	FG	9.61*	.588
4	Manipulation (Object)	MO	7.14*	.638

Multiple Regression Model

$$Y = 2.68 + .116\ FS + .068\ MP + .323\ FG - .032\ MO$$

* = Significant ($p < .05$)
** = Highly significant ($p < .01$)

Four independent variables were found to be significant predictors of the dependent variable Y (Girls' affective response to the teachers). Three were teacher nonverbal behaviors and the fourth was the girls' first impression of the teachers (i.e., the girls' affective rating of the teachers in response to a 15-second videotaped exposure). Only one of the predictor variables varied inversely in relation to the dependent variable. All others varied directly.

The various analyses described above all relate to the hypothesis that visual cues instrumental in the communication of affect are identifiable and relate significantly with

the affective responses to the cues. In every anlysis, significant predictor variables ($p < .05$) were identified and the amount of explained variability in the dependent variable for which they accounted exceeded 60% in every case. On the basis of these findings, Hypothesis 2 was not rejected.

Hypothesis 3

H_3: Visual cues reported by students will relate significantly to their indicated affective response to teachers.

The third hypothesis was developed to examine the suggestion in the literature of nonverbal communication that nonverbal cues instrumental in the communication of affect do not tend to operate at the conscious level of awareness. It was assumed that if students were consciously aware of the teacher behaviors which contributed to their affective responses, they would report them (See pg. 8.) Or, if they were not consciously aware of the behaviors, they would not report them. The distribution of reported and unreported nonverbal behaviors is shown in Table 5.

Table 5. Distrinution of reported and unreported nonverbal behaviors

Number of data cards with nonverbal behaviors reported	618
Number of data cards with nonverbal behaviors unreported	1240
Total number of data cards	1858

It was reasoned that if nonverbal cues were registered consciously by the students they would be reported significantly more often than not. Conversely, if the teachers' nonverbal behaviors were not registered consciously, they would go unreported more often than reported. That is, the probability (p) of cues being reported would not equal the probability (q) of cues being unreported. In null form, the hypothesis to be tested was:

H_o: $p = q = 0.5$. Using the binomial test (Siegel, 1956, p. 41), H_o was rejected ($p < .0001$). Thus, Hypothesis 3 of the investigation was rejected.

Findings Not Related to the Hypotheses

In accumulating the teacher nonverbal behavior data which were employed in the various regression analyses, considerable descriptive information concerning characteristic patterns of teacher nonverbal behavior became available. The mean values of the teachers' nonverbal behaviors appear in Appendix - Mean Values of Teacher Nonverbal Behaviors.

In the Horizontal Head Swivel category, a comparison of the frequency and duration means for the 0° (Head facing forward) and the 0°-90° (Right or left) head positions indicates that the frequencies of the two behaviors were much closer than the duration values. This suggests that when teachers assumed the 0°-90° head position they tended to sustain it rather than move back and forth between it and other head positions.

The Vertical Head Tilt category indicates that the Untilted position is both most frequent and has the highest duration values. When the Tilted Forward and Untilted means are compared, it is evident that teachers tend to sustain the untilted position rather than switch frequently between it and the Tilted Forward position.

Teachers tended to shake or nod their heads rather infrequently, as indicated in the Head Movement category. Their heads exhibited little or no movement 91.1 percent of the time. Head nodding was more frequently observed than head shaking.

Examination of the Facial Expression category indicates that the neutral expression behavior was both most frequent and of longest duration among the teachers. The Facial Expression (Smile) behavior ranked third among Facial Expression variables in both frequency and duration. Yet, this behavior was shown to be the best predictor of student affective response to the teachers in the regression analyses. The indication is that teachers did not have to smile with exceptionally high frequency or duration to be given a

high affective rating by the students.

The Gaze Direction category indicates that most of the teachers in the study tended to look away from the television camera while they were being videotaped; hence, away from the students who viewed the tapes (the Combined Away subcategory had the highest frequency and duration mean values). Although the teachers often looked to the side and downward, they seldom looked upward.

In the Body Immediacy category, the indication is that teachers spent most of the time facing forward or to the side. The teachers had their back to the camera 9.2 percent of the time.

Examination of the Body Lean category indicates that the teachers tended to stand erect, unsupported, most frequently and with the highest duration. The Backward, supported behavior occurred most infrequently and with the shortest duration. The regression analysis indicated that this behavior was a significant predictor of student affective responses to teachers. This relationship suggests that teachers who leaned back, supported against an object, did not have to do it often or for long periods of time in order to receive a low affective rating by the students.

In the Arm Symmetry category, teachers were found to maintain their arms in an asymmetric position most frequently and with the greatest duration. The Arms Akimbo position had a low duration mean but had been shown by regression analysis to be a significant inverse predictor of the affective responses of girls to the teachers. The indication is that the behvaior does not have to occur with high duration to act as a determiner of student affective response.

The mean values of frequency and duration for the Gesticulation category indicate that gesturing and not gesturing accurred with nearly equal frequency. The fact that the duration mean for not gesturing was double that for gesturing indicates that teachers tended to sustain periods of not gesturing longer than periods of gesturing. The re-

gression analysis had indicated that the Gesticulation (Gesturing) behavior was a significant predictor of boys' affective responses to teachers.

Examination of the Manipulation category indicates that teachers exhibit no manipulation nearly half (Duration % = 48.0) the time. The most common manipulative act displayed by the teachers was carrying objects. Object manipulation, which had been shown by the regression analysis to be a significant predictor of affective response for both boys and girls, had the third highest duration value among the Manipulation categories.

The Gross Body Movement category means indicate that the teachers spent about half the time standing essentially motionless. Rocking behavior, Walking, and Sitting followed, respectively, in order of duration. The low frequency for the Sitting behavior indicates that, when it occurred, it was a behavior which tended to be sustained.

CONCLUSIONS

Because of the failure to reject the hypothesis that a reliable category system for recording visually perceived nonverbal teacher behaviors can be developed, it is concluded that the instrument employed in this investigation was a relaible measure of these behaviors.

The findings related to the several multiple regression analyses lead to a number of conclusions. Nonverbal behaviors of teachers were analyzed in terms of frequency and duration of occurrence, separately and in combination. When measured in combination, the duration variables consistently proved to be better predictors than the frequency variables. As a result, it is concluded that teacher nonverbal behaviors measured in terms of duration, are better predictors of student affective responses to teachers than the same variables measured in terms of frequency of occurrence.

When student affective responses to teachers were examined without distinguishing the sex of the respondents (i.e., combined responses of boys and girls), several variables

were found to be significant predictors of student affective response. It is concluded that students, in general (i.e., when not distinguished according to sex), prefer teachers who: smile frequently; present objects to the class for inspection; are younger; do not lean back against objects; and, do not manipulate objects.

When the affective responses of boys and girls were related separately to the nonverbal behaviors of teachers, differences in the respective significant predictor variables were discerned. Thus, it is concluded that the boys and girls responded differently to the nonverbal behaviors of the teachers in the study. Boys tended to prefer teachers who: smiled frequently; presented objects to the class for their inspection; were younger; and gestured more frequently. Girls, on the other hand, preferred teachers who: smiled frequently; presented objects to the class for their inspection; created positive first impressions; and did not manipulate objects.

When the number of students who reported nonverbal behaviors as the basis for their affective rating of the teachers was compared with the number of students who failed to report nonverbal behaviors, the number who failed to report was significantly higher than the number who did report the behaviors. Thus, it is concluded that the students tended to make their affective judgments in the absence of consciously perceived awareness of the teachers' specific nonverbal behaviors.

APPENDIX

I. Categories of Teacher Nonverbal Behavior

II. Mean Values of Teacher Nonverbal Behaviors

Body Region	Category	Behavior	Symbol
I. Head	A. Head Orientation (π = 0.75)*	1. 0° (Head facing forward.)	(0)
		2. 0°-90° (Right or left.)	(/)
		3. > 90° (Right or left.)	( )
	B. Vertical Head Tilt (π = 0.65)	1. Untilted (Level with floor.)	(O)
		2. Tilted forward	(D)
		3. Tilted backward	(A)
	C. Head Movement (π = 0.70)	1. Little or no movement	(Blank)
		2. Nodding head	(+)
		3. Shaking head	(-)
	D. Facial Expression (π = 0.75)	1. Neutral expression	(/)
		2. Smile	(S)
		3. Frown, grimace, etc.	(F)
		4. Other expression	(oo)
		5. Expression not visible	(N)
	E. Gaze Direction (π = 0.78)	1. Generally toward subject	(O)
		2. Toward the side (Right or left.)	(S)
		3. Upward	(U)
		4. Downward	(D)
		5. Toward the chalkboard	(/)
		6. Away from subject (Eyes not visible)	(N)
		7. Combined away from subject (2-6)	(C)
II. Upper Body	A. Immediacy (π = 0.83)	1. 0° (Facing subject)	(0)
		2. 0°-90° (Right or left.)	(/)
		3. > 90° (Back to subject.)	( )
	B. Body Lean (π = 0.83)	1. Forward, unsupported	(F)
		2. Forward, supported	(FS)
		3. Backward, unsupported	(B)
		4. Backward, supported	(BS)
		5. Erect, unsupported	(O)
		6. Erect, supported	(OS)
		7. Total supported (2 + 4 + 6)	(TS)
III. Arms and Hands	A. Arm Symmetry (π = 0.85)	1. Symmetrical; arms at sides	(S)
		2. Symmetrical; arms folded across chest	(F)
		3. Symmetrical; arms akimbo	(K)
		4. Symmetrical; hands behind body	(B)
		5. Other symmetrical positions	(oo)
		6. Arms asymmetrical	(/)
		7. Total symmetrical (1 - 5)	(TS)
	B. Gesticulation (π = 0.81)	1. Gesturing	(G)
		2. Not gesturing	(/)
	C. Manipulation (π = 0.81)	1. Manipulating self	(S)
		2. Manipulating object	(oo)
		3. Carrying object	(C)
		4. Presenting object to class	(P)
		5. Writing on chalkboard	(W)
		6. No manipulation	(/)
IV. Entire Body	A. Gross Body Movement (π = 0.76)	1. Rocking	(R)
		2. Walking	(W)
		3. Sitting	(S)
		4. Standing essentially motionless	(/)

*π = Interobserver agreement coefficient

MEAN VALUES OF TEACHER NONVERBAL BEHAVIORS

Category	Behavior	Mean Frequency	Mean Duration	Mean Duration (%)
Horizontal Head Swivel	1. 0° (Head facing forward)	7.75	11.60	20.9
	2. 0°-90° (Right or left)	10.07	37.37	66.8
	3. > 90° (Right or left)	3.44	7.03	12.5
Vertical Head Tilt	1. Untilted (Level with floor)	7.32	44.30	79.2
	2. Tilted forward	2.95	10.17	18.2
	3. Tilted backward	1.09	1.53	2.7
Head Movement	1. Little or no movement	4.68	51.17	91.2
	2. Nodding head	3.56	4.19	7.5
	3. Shaking head	.60	.63	1.1
Facial Expression	1. Neutral expression	9.33	40.09	71.6
	2. Smile	3.34	4.79	8.5
	3. Frown, grimace, etc.	0.00	0.00	0.0
	4. Other expression	5.89	8.09	14.4
	5. Expression not visible	1.69	2.99	5.3
Gaze Direction	1. Generally toward subject	4.23	5.31	9.1
	2. Toward the side (Left or right)	11.03	31.12	55.1
	3. Upward	.24	.25	.5
	4. Downward	6.37	11.30	21.0
	5. Toward the chalkboard	3.42	6.89	12.3
	6. Away from subject (Eyes not visible)	.63	1.02	1.8
	7. Combined away from subject	22.36	50.68	90.5
Body Immediacy	1. 0° (Facing subject)	6.44	21.91	39.2
	2. 0°-90° (Right or left)	7.99	29.12	52.0
	3. > 90° (Back to subject)	3.70	5.14	9.2
Body Lean	1. Forward, unsupported	1.96	4.09	7.1
	2. Forward, supported	.61	2.35	4.2
	3. Backward, unsupported	.03	.07	0.1
	4. Backward, supported	.08	.03	0.0
	5. Erect, unsupported	4.02	41.49	74.2
	6. Erect, supported	1.73	7.17	12.8
	7. Total supported	2.25	10.12	18.1
Arm Symmetry	1. Symmetrical; arms at sides	1.38	2.60	4.6
	2. Symmetrical; arms folded across chest	.16	.44	0.8
	3. Symmetrical; arms akimbo	.14	.28	0.5
	4. Symmetrical; hands behind body	.02	.12	0.2
	5. Other symmetrical positions	6.53	19.65	35.0
	6. Arms asymmetrical	7.12	32.91	58.8
	7. Total symmetrical	8.31	23.09	41.2
Gesticulation	1. Gesturing	8.93	18.67	33.3
	2. Not gesturing	9.23	37.33	66.7
Manipulation	1. Manipulating self	1.96	1.74	3.1
	2. Manipulating object	4.79	8.01	14.3
	3. Carrying object	3.21	11.53	20.6
	4. Presenting object to class	1.05	3.03	5.4
	5. Writing on chalkboard	2.70	4.81	8.6
	6. No manipulation	6.63	26.84	48.0
Gross Body Movement	1. Rocking	7.81	11.28	20.1
	2. Walking	6.79	9.95	17.8
	3. Sitting	.24	6.31	11.3
	4. Standing essentially motionless	9.95	28.46	50.8

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